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EXAMINER

SHEVIN, MARK L

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/583,827	Applicant(s) SHOJI ET AL.	
	Examiner Mark L. Shevin	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 June 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/19/2006 and 02/08/2008</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Status

1. Claims 1-17, filed as a preliminary amendment on June 19th, 2006, are pending.

Priority

2. Applicants claim to foreign priority of Japanese patent application 2004-295598, filed October 8th, 2004.

Information Disclosure Statements

3. The information disclosure statements (IDS) submitted June 19th, 2006 and February 8th 2008 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements have been considered by the examiner. Please refer to applicants' copies of the 1449 forms submitted herewith.

Drawings

4. The drawings are objected to because the photographs are not of sufficient qualities so that all details in the photographs are reproducible in the printed patent (MPEP 608.02, V, b2)

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate

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changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Joint Inventors

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. **Claims 1-4 and 6-9** are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Disam** (US 5,623,725 A1).

Disam:

Disam, drawn to a process for producing very pure platinum materials with Y_2O_3 reinforcements (Abstract), teaches that 0.2 – 0.6 wt% of Y_2O_3 with particle sizes of less than 1 micron, preferably near 20 nm, are mixed into platinum powder as dispersoid (col. 5, lines 43-46). The spacing of the Y_2O_3 particles in the platinum matrix should be from 100 to 600 nm, in particular, 150-500 nm (col. 5, lines 55-60).

As yttria (Y_2O_3) is mixed in with platinum, no high temperature internal oxidation process is required meaning that little or no oxygen diffuses into the platinum metal matrix. Thus one of ordinary skill would reasonably expect the oxygen concentration to be below 100 ppm.

Regarding claim 1, Disam taught the formation of an oxide-dispersion strengthened platinum material with metallic oxide particles of an additive metal, in this case, the additive metal is Y and the oxide particles are Y_2O_3 , however Disam does not specifically teach that the concentration of oxygen in the material except oxygen bound

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to the additive metal is 100 ppm or lower. However, from Disam, one would reasonably expect the oxygen content to be within the claimed range due to lack of a high temperature oxidation process, the use of pre-oxidized yttria, and degassing (col. 5, lines 25-42). Thus Disam anticipates claim 1.

Alternatively, it would have been obvious to one of ordinary skill in oxide dispersion strengthened platinum materials, at the time of the invention, to form an oxide-dispersion strengthened platinum material with an unbound oxygen content of 100 ppm or lower as the disclosure of Disam suggests that the milled powder composite of yttria and platinum should be degassed, the use of yttria instead of internally oxidizing Y, and Disam assiduous attention to the purity of the powdered platinum material all suggest the minimization of impurities such as unbound oxygen. Thus, at a minimum, the disclosure of Disam would have rendered the material of claim 1 obvious to one of ordinary skill in the art. From MPEP 2112: "[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on 'inherency' under 35 U.S.C. 102, on '*prima facie* obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same."

Regarding claim 2, Disam further taught that the yttria particle size should be less than 1 micron, preferably around 20 nm (0.02 micron), which is within the claimed size range of less than 0.2 microns. Disam also taught that the interparticle spacing of yttria should be 100 – 600 nm (0.1 – 0.6 microns), preferably 150 – 500 microns (0.15 – 0.5 microns) which is within the claimed interparticle spacing range of 0.01 – 2.7 microns.

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Lastly, Disam taught that the amount of the reinforcing yttria dispersion should be 0.2 – 0.6 wt%, preferably 0.25 - 0.5 wt%, which is within the claimed range of 0.01 - 0.5 wt%. From MPEP 2131.03: "[W]hen, as by a recitation of ranges or otherwise, a claim covers several compositions, the claim is 'anticipated' if *one* of them is in the prior art." *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (citing *In re Petering*, 301 F.2d 676, 682, 133 USPQ 275, 280 (CCPA 1962)). Thus Disam anticipates claim 2.

Alternatively, it would have been obvious to one of ordinary skill in oxide dispersion strengthened platinum materials, at the time of the invention, to choose the instantly claimed ranges of particle diameter, average value of distances, and concentration of the dispersed particle through process optimization as Disam taught a platinum material with overlapping ranges of these properties for the same purpose of providing a high temperature platinum material with oxide dispersion strengthening and it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See *In re Boesch*, 205 USPQ 215 (CCPA 1980). Furthermore, MPEP 2144.05, "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990)". Thus, at a minimum, the disclosure of Disam would have rendered the material of claim 2 obvious to one of ordinary skill in the art.

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Regarding claims 3 and 6, Beyond the features of claims 1 and 2 that are anticipated by Disam, Disam does not specifically recite the oxidation rate of the additive metal, which in this case is Y. However, one of ordinary skill would reasonably expect the oxidation rate of the additive metal to be 100% as Disam added yttria, which is Yttrium metal (Y) that is 100% oxidized to Y_2O_3 . Thus Disam anticipates claims 3 and 6.

Alternatively, one of ordinary skill in the art would have wanted the oxidation rate to be as high as possible, indeed 100% in view of Disam's lack of a high temperature oxidation process, the use of pre-oxidized yttria, and degassing (col. 5, lines 25-42) because there would be no further opportunity to further oxidize an additive metal that was not 100% oxidized. Thus, at a minimum, the disclosure of Disam would have rendered the material of claims 3 and 6 obvious to one of ordinary skill in the art.

Regarding claims 4 and 7-9, the additive metal is Y, which is present in the yttria (Y_2O_3) and thus Disam anticipates claims 4 and 7-9.

Alternatively, it would have been obvious to one of ordinary skill in oxide—dispersion strengthened platinum materials to select Y as an additive metal to be oxidized as Disam taught that the resultant oxide, Y_2O_3 , does not lead to any discoloration of molten glasses when the platinum material is used in glass-making apparatuses (col. 5, lines 42-68). Thus, at a minimum, the disclosure of Disam would have rendered claims 4 and 7-9 obvious to one of ordinary skill in the art.

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6. **Claims 1, 3-5, 8, 11, 12, and 15** are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Manhardt** (US 2002/0056491 A1) or **JP '070** (JP 10-280070 – Machine translation).

Manhardt

Manhardt, drawn to a gold-free platinum material that is dispersion-strengthened by small, finely dispersed base metal oxide particles (Abstract), discloses that the base metal oxides of 0.01 – 0.5 wt% Sc or Sc and a mixture of at least one element selected from the group consisting of Zr, Y, and Ce with a total base metal content of 0.05 - 0.5 wt% (para 0006).

The degree of oxidation should be 75% because the require mechanical strength is not always achieved at lower degrees of oxidation and one risks increased corrosive attack and impaired weldability (para 0008). Furthermore, it is particular effective is at least 90wt% of the base metal is present in the form of the oxide (para 0010).

As for the matrix material, Pt-Rh (1-25wt% Rh) or Pt-Ir (1-30 wt% Ir) alloys may be used in Manhardt invention (para 0011 and 0016).

The theoretical maximum oxygen content of the platinum alloys is based on the assumption that the base metals (Y, Sc, and Zr) are stoichiometrically converted to their oxide (Y_2O_3 , Sc_2O_3 , and ZrO_2) however the nominal maximum value is often slightly exceeded due to the presence of impurities such as Si and Al which are also oxidized (para 0024). Manhardt performed testing to determine the length of time that the platinum materials needed to be oxidized to reach the 100% oxidation rate, i.e. the maximum theoretical oxygen content as shown in Table 1. Both examples show a

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maximum attained oxygen content of less than 100 ppm over the maximum theoretical oxygen content.

JP '070:

JP '070, drawn to oxide-dispersion-strengthened platinum materials (Abstract) discloses a Pt-Rh, Pt-In, and Pt-Au alloy (claim 14) with 0.5-25 wt% Rh (claim 15), 0.3-50 wt% Ir (claim 16), or 0.5-8 wt% Au (claim 17) with 0.005 - 1 wt% of at least two of Zr, Y, and Ce (claims 2-13, 25, 26, 27, 28, 34, para 0013, 0015, and 0016).

The base metals are present as oxides at a level of 90 wt% or more (Abstract, claims 1 and 2)

The amount of oxygen absorbed by the platinum material during oxidation is measured (para 0022) and Table 1 discloses that the measured values of the oxygen content are equivalent to, or slightly higher (100 ppm or less) than, the theoretical oxygen content required to oxidize 75 wt% and 100 wt% of the base metal (Para 0042 and 0043, Table 1).

Table 1 shows that the measured oxygen content in wt% in the column to the right of Ce and the estimated amount of oxygen required to oxidize the alloy to 75% or 100 wt% respectively in the next two columns to the right. Examples 3, 4, 5, 6, 7, 8, 9 and 10 disclose Pt based alloy with oxygen contents (in wt% - convert to ppm by multiplying by 10,000) that are within 100 ppm of the estimated 100% oxidation degree oxygen content for the given material.

Para 0043 teaches that one reason why the oxygen content of some specimens exceeds the 100% oxidation value to that other impurity elements such as Al, Si may be further oxidized and that PtO may be formed by heat treatment.

Regarding claim 1, Manhardt teaches a gold-free oxide-dispersion strengthened platinum material that is dispersion-strengthened by small, finely dispersed base metal oxide particles (Abstract), discloses that the base metal oxides of 0.01 – 0.5 wt% Sc or Sc and a mixture of at least one element selected from the group consisting of Zr, Y, and Ce with a total base metal content of 0.05 - 0.5 wt% (para 0006). Manhardt did not specifically recite that the concentration of oxygen in the material except oxygen bound to the additive metal is 100 ppm or lower. However, Manhardt further taught that the theoretical maximum oxygen content of the platinum alloys is based on the assumption that the base metals (Y, Sc, and Zr) are stoichiometrically converted to their oxide (Y_2O_3 , Sc_2O_3 , and ZrO_2) however the nominal maximum value is often slightly exceeded due to the presence of impurities such as Si and Al which are also oxidized (para 0024). Manhardt performed testing to determine the length of time that the platinum materials needed to be oxidized to reach the 100% oxidation rate, i.e. the maximum theoretical oxygen content as shown in Table 1. Both examples show a maximum attained oxygen content of less than 100 ppm over the maximum theoretical oxygen content. The oxygen contents shown by Manhardt are reasonably interpreted as meaning that the platinum materials of Manhardt in fact possess the claimed oxygen content of less than 100 ppm. See MPEP 2112 and 2131.03 as recited at sec 5, claim 2, *supra*. Thus Manhardt anticipates claim 1.

Alternatively, it would have been obvious to one of ordinary skill in oxide dispersion strengthened platinum materials, at the time of the invention, to form an oxide-dispersion strengthened platinum material with an unbound oxygen content of 100 ppm or lower as the disclosure of Manhardt in paragraphs 0023-0024 and Table 1 that the goal was to minimize the time needed to ensure complete oxidation which provides motivation to minimize the oxygen content beyond the maximum theoretical content because extra time is spent diffusing oxygen into the metal and oxidizing impurities or generally producing diminishing returns in strength in view of hundreds of hours spent perform oxidation. Thus, at a minimum, the disclosure of Manhardt would have rendered the material of claim 1 obvious to one of ordinary skill in the art.

JP '070 discloses oxide-dispersion-strengthened platinum materials (Abstract) including Pt-Rh, Pt-In, and Pt-Au alloys (claim 14) with 0.5-25 wt% Rh (claim 15), 0.3-50 wt% Ir (claim 16), or 0.5-8 wt% Au (claim 17) that further contain 0.005 - 1 wt% of at least two additive metals of Zr, Y, and Ce (claims 2-13, 25, 26, 27, 28, 34, para 0013, 0015, and 0016). JP '070 does not specifically recite the concentration of oxygen in the material except oxygen bound to the additive metal as being 100 ppm or lower.

However, JP '070 teaches that the amount of oxygen absorbed by the platinum material during oxidation is measured (para 0022) and Table 1 discloses that the measured values of the oxygen content are equivalent to, or slightly higher (100 ppm or

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less) than, the theoretical oxygen content required to oxidize 75 wt% and 100 wt% of the base metal (Para 0042 and 0043, Table 1).

Table 1 shows that the measured oxygen content in wt% in the column to the right of Ce and the estimated amount of oxygen required to oxidize the alloy to 75% or 100 wt% respectively in the next two columns to the right. Examples 3, 4, 5, 6, 7, 8, 9 and 10 disclose Pt based alloy with oxygen contents (in wt% - convert to ppm by multiplying by 10,000) that are within 100 ppm of the estimated 100% oxidation degree oxygen content for the given material. Thus these disclosures are reasonably interpreted as meaning that the platinum materials of JP '070 in fact possess the required residual oxygen content of less than 100 ppm.

Alternatively, it would have been obvious to one of ordinary skill in oxide dispersion strengthened platinum materials, at the time of the invention, to form an oxide-dispersion strengthened platinum material with an unbound oxygen content of 100 ppm or lower as the disclosure of JP '070 disclosed oxidizing the platinum material to amount of 90wt%, which JP '070 suggests is measured based on the oxygen content calculated for 100 wt% oxidation and teaches that additional oxygen enters when attached to contaminants such as Si or Al in very small amounts (para 0043). Motivation to minimize the excess oxygen content not bound to additive metal comes from the teaching that this excess oxygen basically goes to waste in oxidizing impurities such as Si or Al and possibly even the Pt base itself to PtO. Thus, at a minimum, the disclosure of JP '070 would have rendered the material of claim 1 obvious to one of ordinary skill in the art.

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Regarding claim 3, Manhardt taught that the degree of oxidation should be 75% (which is within the claimed range) because the required mechanical strength is not always achieved at lower degrees of oxidation and one risks increased corrosive attack and impaired weldability (para 0008). Furthermore, it is particularly effective if at least 90 wt% (also within the claimed range) of the base metal is present in the form of the oxide (para 0010). Thus Manhardt anticipates claim 3.

JP '070 taught that the base metals are present as oxides at a level of 90 wt% (which is within the claimed range) or more (Abstract, claims 1 and 2). Thus JP '070 anticipates claim 3.

Regarding claims 4 and 8, Manhardt discloses that the base metal oxides of 0.01 – 0.5 wt% Sc or Sc and a mixture of at least one element selected from the group consisting of Zr, Y, and Ce with a total base metal content of 0.05 - 0.5 wt% (para 0006) of which Zr and Y are in the claimed Markush group while JP '070, discloses a Pt-Rh, Pt-In, and Pt-Au alloy (claim 14) with 0.5-25 wt% Rh (claim 15), 0.3-50 wt% Ir (claim 16), or 0.5-8 wt% Au (claim 17) with 0.005 - 1 wt% of at least two of Zr, Y, and Ce (claims 2-13, 25, 26, 27, 28, 34, para 0013, 0015, and 0016) where Zr and Y are in the claimed Markush group. Thus Manhardt, or alternatively, JP '070, anticipate both claims 4 and 8.

Regarding claims 5, 11, 12, and 15, Manhardt disclosed that his matrix material may be Pt-Rh (1-25wt% Rh) or Pt-Ir (1-30 wt% Ir) alloys (para 0011 and 0016) and JP '070 discloses a Pt-Rh, Pt-In, and Pt-Au alloy (claim 14) with 0.5-25 wt% Rh (claim 15), 0.3-50 wt% Ir (claim 16), or 0.5-8 wt% Au (claim 17) with 0.005 - 1 wt% of at least two of

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Zr, Y, and Ce (claims 2-13, 25, 26, 27, 28, 34, para 0013, 0015, and 0016). Thus Manhardt, or alternatively, JP '070, anticipate claims 5, 11, 12, and 15.

7. **Claims 5 and 10-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Disam** (US 5,623,725 A1) as applied to claims 1-4, and 6-9 above, in further view of **Fischer** (B. Fischer. New Platinum Materials for High Temperature Applications, *Advanced Engineering Materials*, No. 10 (3), (2001), p. 811-820.)

The disclosure of Disam was discussed above, however Disam did not teach the use of base platinum alloys such as Pt-Rh, Pt-Au, Pt-Rh-Au, or Pt-Ir.

Fischer:

Fischer, drawn to a report on a new class of dispersion hardened platinum material (Abstract), discloses that in the glass industry, the only elements that can be used to achieve solid solution strengthening with platinum are rhodium and iridium, whereas gold is alloyed with platinum to reduce the wetting of the platinum surface by glass melts (p. 812, col. 1, para 1).

Fisher claims to have designed a new ODS platinum material, called platinum DPH, which is designed to remedy the problems of welding previous ODS materials and the substantial reduction in ductility that accompanied previous attempts at strengthening through dispersion (p. 812, col. 2, para 2-4).

Oxidizable additions in this new class of ODS platinum materials of the platinum DPH type include Zr, Y, and Ce and the matrix metals include Pt-Rh and Pt-Au alloys (p. 813, col. 1, para 1).

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The dispersion particles should have a diameter of less than 1 micron and be separated by less than 10 microns in order to ensure significant strengthening of the precious metal matrix and low creep rates (p. 813, col. 2, para 3).

In particular, the dispersion particles are in the range of about 2-10 nm in diameter (0.002 – 0.01 micron) (p. 813, col. 2, para 4).

Regarding claims 5 and 10-16, it would have been obvious to one of ordinary skill in oxide dispersion strengthened platinum materials, at the time of the invention, to substitute the platinum powder of Disam with a Pt-Rh or Pt-Au alloy powder of Fischer as Fischer taught that such Pt-Rh or Pt-Au are have greater strength and reduced wetting of the platinum material (p. 812, col. 1, para 1) and furthermore, Hereaus currently sells Pt DPH, Pt-10%Rh DPH and Pt-5%Au DPH materials with a particle size and interparticle spacing that overlaps the claimed range, which would lead one of ordinary skill to believe that such a modification would indeed have a reasonably expectation of success.

Regarding claim 17, it would have been obvious to one of ordinary skill in oxide dispersion strengthened platinum materials, at the time of the invention, to form an oxide dispersion hardened alloy with a Pt-Rh, Pt-Au, Pt-Rh-Au or Pt-Ir alloy matrix, the claimed oxygen content, the claimed interparticle spacing, the claimed particle concentration, the claimed oxidation rate, and at least one of the claimed additive metals as Disam possess the claimed oxygen content (see 102-103 rejection to claim 1 above, the additive metal Y in the form of Y_2O_3 , Disam taught that the yttria particle size should be less than 1 micron, preferably around 20 nm (0.02 micron), which is within the

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claimed size range of less than 0.2 microns, Disam also taught that the interparticle spacing of yttria should be 100 – 600 nm (0.1 – 0.6 microns), preferably 150 – 500 microns (0.15 – 0.5 microns) which is within the claimed interparticle spacing range of 0.01 – 2.7 microns, Disam taught that the amount of the reinforcing yttria dispersion should be 0.2 – 0.6 wt%, preferably 0.25 - 0.5 wt%, which is within the claimed range of 0.01 - 0.5 wt%, the oxidation rate of the additive metal is 100% oxidized (as explained in the rejection of claims 3 and 6 above, and lastly one would have substituted the matrix material of Disam for an alloy of Pt-Rh or Pt-Au as taught by Fischer in the rejection of claims 5 and 10-16 above for the purpose of obtaining higher strength through solid solution strengthening or reduced wetting of the platinum material, or both.

8. **Claims 2, 6-7, 9-10, 13-14, and 16-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Manhardt** (US 2002/0056491 A1) or **JP '070** (JP 10-280070 – Machine translation). as applied to claims 1, 3-5, 8, 11, 12, and 15 above, in further view of **Fischer** (B. Fischer. New Platinum Materials for High Temperature Applications, *Advanced Engineering Materials*, No. 10 (3), (2001), p. 811-820.)

The disclosures of Manhardt and JP '070 were discussed above, however neither alloy taught the size or interparticle spacing of the additive metal oxide particles. The disclosure of Fischer was discussed above as well.

Regarding claim 2, it would have been obvious to one of ordinary skill in oxide dispersion strengthened platinum materials, at the time of the invention, to modify the oxide-dispersion-strengthened platinum materials of either Manhardt or JP '070 to form particles in the instantly claimed range and with the instantly claimed interparticle

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spacing as Fischer taught, in the content of a very similar oxide-dispersion-strengthened platinum material effective for the same purpose of high temperature strength, that Zr and Y dispersion particles should have a diameter of less than 1 micron and be separated by less than 10 microns in order to ensure significant strengthening of the precious metal matrix and low creep rates (p. 813, col. 2, para 3) and it has been held that there the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See *In re Boesch*, and MPEP 2144.05 as stated in sec 5, claim 2, *supra*.

Regarding claim 6, Manhardt taught that the degree of oxidation should be 75% because the require mechanical strength is not always achieved at lower degrees of oxidation and one risks increased corrosive attack and impaired weldability (para 0008). Furthermore, it is particular effective is at least 90wt% of the base metal is present in the form of the oxide (para 0010).

JP '070 taught that the base metals are present as oxides at a level of 90 wt% or more (Abstract, claims 1 and 2).

Regarding claims 7 and 9, Manhardt discloses that the base metal oxides of 0.01 – 0.5 wt% Sc or Sc and a mixture of at least one element selected from the group consisting of Zr, Y, and Ce with a total base metal content of 0.05 - 0.5 wt% (para 0006) of which Zr and Y are in the claimed Markush group while JP '070, discloses a Pt-Rh, Pt-In, and Pt-Au alloy (claim 14) with 0.5-25 wt% Rh (claim 15), 0.3-50 wt% Ir (claim 16), or 0.5-8 wt% Au (claim 17) with 0.005 - 1 wt% of at least two of Zr, Y, and Ce

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(claims 2-13, 25, 26, 27, 28, 34, para 0013, 0015, and 0016) where Zr and Y are in the claimed Markush group.

Regarding claims 10, 13, 14, and 16, Manhardt disclosed that his matrix material may be Pt-Rh (1-25wt% Rh) or Pt-Ir (1-30 wt% Ir) alloys (para 0011 and 0016) and JP '070) discloses a Pt-Rh, Pt-In, and Pt-Au alloy (claim 14) with 0.5-25 wt% Rh (claim 15), 0.3-50 wt% Ir (claim 16), or 0.5-8 wt% Au (claim 17) with 0.005 - 1 wt% of at least two of Zr, Y, and Ce (claims 2-13, 25, 26, 27, 28, 34, para 0013, 0015, and 0016).

Regarding claim 17, it would have been obvious to one of ordinary skill in oxide dispersion strengthened platinum materials, at the time of the invention, to form an oxide dispersion hardened alloy with a Pt-Rh, Pt-Au, Pt-Rh-Au or Pt-Ir alloy matrix, the claimed oxygen content, the claimed interparticle spacing, the claimed particle concentration, the claimed oxidation rate, and at least one of the claimed additive metals as both Manhardt and JP '070 possess the claimed oxygen content (see 102-103 rejection to claim 1 above, the additive metals of Zr, Y, Ce, Fischer taught that desired dispersion particle size and interparticle spacing to achieve high strengthening, Manhardt and JP '070 both taught ranges of additive metals that overlap the claimed range of 0.01 - 0.5 wt% (Manhardt - para 0006 , JP '070 - claims 2-13, 25, 26, 27, 28, 34, para 0013, 0015, and 0016), that contain at least one metal of Zr, Ca, Y, and Sm, and have a matrix material of one of Pt-Rh, Pt-Au, Pt-Rh-Au, or Pt-Ir, and possess the claimed oxygen content as explained in the 102/103 rejection to claim 1 above. Motivation to form the claimed oxide-dispersion-strengthened platinum material comes from the disclosures of Manhardt and JP '070 as explained in the rejections above and

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in the disclosure of Fischer in teaching optimum dispersion particle size and interparticle spacing for a similar platinum material to achieve optimum strengthening without impairing workability for a material designing for similar high temperature service.

Conclusion

-- Claims 1-17 (All pending) are rejected

-- No claims are allowed

The rejections above rely on the references for all the teachings expressed in the text of the references and/or one of ordinary skill in the metallurgical art would have reasonably understood or implied from the texts of the references. To emphasize certain aspects of the prior art, only specific portions of the texts have been pointed out. Each reference as a whole should be reviewed in responding to the rejection, since other sections of the same reference and/or various combinations of the cited references may be relied on in future rejections in view of amendments.

All recited limitations in the instant claims have been met by the rejections as set forth above. Applicant is reminded that when amendment and/or revision is required, applicant should therefore specifically point out the support for any amendments made to the disclosure. See 37 C.F.R. § 1.121; 37 C.F.R. Part §41.37 (c)(1)(v); MPEP §714.02; and MPEP §2411.01(B).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark L. Shevin whose telephone number is (571) 270-3588 and fax number is (571) 270-4588. The examiner can normally be reached on Monday - Friday, 8:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Mark L. Shevin/

February 16th, 2009
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/George Wyszomierski/
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